CLAIMS

What is claimed is:

1. A multi-band infrared imaging device, comprising:
An uncooled microbolometer focal plane array comprising a plurality of pixels, each of said pixels further comprising at least one structure layer, a detector layer and a medium wave absorber layer, and wherein each said pixel simultaneously detects at least two IR bands.

2. The device according to claim 1, wherein said array is fabricated by LWIR processing.

3. The device according to claim 1, wherein said bands are selected from the group consisting of: MWIR/LWIR, MWIR/SWIR, SWIR/LWIR, SWIR/MWIR, and SWIR/MWIR/LWIR.

4. The device according to claim 1, wherein said structure layer is selected from at least one of the group consisting of: metal films, semiconductor films, and dielectrics.

5. The device according to claim 1, wherein said medium wave absorber layer is selected from at least one of the group consisting of: metal films, semiconductor films, and dielectrics with high MW absorption.

6. An optical stack for an uncooled microbolometer device, comprising:
a read out integrated circuit (ROIC) substrate;
a reflector on a surface of said substrate;

a plurality of layers fabricated by LWIR processing, wherein said plurality of layers include an MWIR absorber, a detector, and at least one structure layer providing support and/or isolation;

a gap between said reflector and said plurality of layers; and

wherein said stack is part of said uncooled microbolometer and detects at least medium wave radiation.

7. The stack according to claim 6, wherein said structure layer is selected from at least one of the group consisting of: metal films, semiconductor films, and dielectrics.

8. The stack according to claim 6, wherein said stack further detects LWIR and/or SWIR.

9. The stack according to claim 6, wherein said structure layer comprises at least one silicon nitride layer and at least one silicon dioxide layer.

10. The stack according to claim 6, wherein said detector is vanadium oxide (VOx) or amorphous silicon.

11. The stack according to claim 6, wherein said MWIR absorber is selected from at least one member of the group consisting of: metal films, semiconductor films, and dielectrics with high MW absorption.

12. The stack according to claim 11, wherein said MWIR absorber is chrome, titanium nitride (TiN) or titanium tungsten (TiW).

13. A multi-spectral infrared (IR) focal plane array, comprising:

an uncooled microbolometer detecting at least two infrared bands, said microbolometer comprising;

a generally planar read out integrated circuit substrate base;

at least one generally planar microbridge disposed approximately parallel to said base and separated by a gap; and

wherein each said microbridge comprises a plurality of layers, said layers comprising at least one structural support layer, a detector layer, and selectively a medium wave absorber layer.

14. The array according to claim 13, wherein said array is selectively programmable to at least one of said bands.

15. The array according to claim 13, wherein said array is processed by LWIR techniques.

16. The array according to claim 13, wherein said at least one microbridge forms a two-dimensional array having at least one microbridge without said medium wave absorber layer.

17. The array according to claim 13, wherein said multiple IR bands are selected from the group consisting of: SWIR/MWIR, SWIR/LWIR, MWIR/LWIR, and SWIR/MWIR/LWIR.

18. The device according to claim 13, wherein each said microbridge of said array is arranged in a pattern having at least one said microbridge with said medium wave absorber and least one said microbridge without said medium wave absorber.

19. The array according to claim 13, wherein said medium wave absorber is selectively formed by a pattern etch.

20. The array according to claim 13, wherein at least one microbridge of the array is optimized for one of said bands and at least one microbridge of the array is optimized for a different one of said bands.